I am grateful to Martijn Valk (a mathematician based in the Netherlands) for permission to publish the following paper based upon his analysis of a phenomenon described in my book *The Second Edge* (now freely downloadable from www.whatabeginning.com/book.pdf).This clearly supports my claim that the powerful and fundamental assertion that opens the Hebrew Scriptures is also a supernaturally-devised numerical cryptogram.
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A statistical analysis of the residue values of Gen. 1:1 modulo 37

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Abstract The numbers 37373 and 737 appear in statistical probability calculations related to the residue values obtained by taking the seven words of Gen. 1:1 modulo 37. This contributes to the case that the numbers of Gen. 1:1 are there not by coincidence nor by design of the human authors. Moreover, if the values of Gen. 1:1 were by design and chosen because of these statistics, it combines four properties into one set which eliminates 99,99999% of the possibilities to choose for the seven residue values.

Introduction

The gematria values of the words of Genesis 1:1 are given by [913,203,86,401,395,407,296]. As described by Vernon Jenkins[1] multiple geometric shapes formed by triangular, hexagonal and 6-pointed star numbers can be formed with these values; and the numbers 37 and 73 play a central role in this. On top of this, two of the seven words are a multiple of 37 and a remarkable amount of word combinations result in a multiple of 37:

296	=	296	=	8 × 37
407	=	407	=	11 × 37
86 + 395	=	481	=	13 × 37
407 + 296	=	703	=	19 × 37
86 + 395 + 296	=	777	=	21 × 37
86 + 395 + 407	=	888	=	24 × 37
913 + 86	=	999	=	27 × 37
203 + 401 + 395	=	999	=	27 × 37
86 + 395 + 407 + 296	=	1184	=	32 × 37
913 + 86 + 296	=	1295	=	35 × 37
203 + 401 + 395 + 296	=	1295	=	35 × 37
913 + 86 + 407	=	1406	=	38 × 37
203 + 401 + 395 + 407	=	1406	=	38 × 37
913 + 203 + 401	=	1517	=	41 × 37
913 + 86 + 407 + 296	=	1702	=	46 × 37
203 + 401 + 395 + 407 + 296	=	1702	=	46 × 37
913 + 203 + 401 + 296	=	1813	=	49 × 37
913 + 203 + 401 + 407	=	1924	=	52 × 37
913 + 203 + 86 + 401 + 395	=	1998	=	54 × 37
913 + 203 + 401 + 407 + 296	=	2220	=	60 × 37
913 + 203 + 86 + 401 + 395 + 296	=	2294	=	62 × 37
913 + 203 + 86 + 401 + 395 + 407	=	2405	=	65 × 37
913 + 203 + 86 + 401 + 395 + 407 + 296	=	2701	=	73 × 37

In this writing we will look into the statistical likelihood related to the many multiples of 37. For this purpose we will define the following properties:

(1) At least two of the seven words are a multiple of 37.
(2) Out of the seven words, at least 23 combinations of words add up to a multiple of 37.
(3) The sum of the seven words is a multiple of 37.

[1] Vernon Jenkins, *The Second Edge*. Sections 1.1, 1.2, 1.3, 1.6 and 2.5 are relevant to understand first before reading this statistical analysis.

1. The likelihood of the many multiples of 37

So let's calculate how likely it statistically is that so many multiples of 37 occur. In order to do this we will look into the residue values of Gen. 1:1 after dividing by 37. This gives the following residue values (e.g. $913 - 24 \times 37 = 25$):

$$[25,18,12,31,25,0,0].$$

Now the sum of a couple of numbers is a multiple of 37 if and only if the residue values of the numbers together add up to a multiple of 37. So for looking into the likelihood of (1), (2) or (3) its sufficient to only consider the residue values. Since every word can independently have 37 values as residue, there are in total $37^7 = 94\,931\,877\,133$ possibilities for the seven words. It turns out that out of these there are $3\,547\,909$ possibilities for which both property (1) and (2) apply (a calculation can be found in appendix A). So for only

$$\frac{3\,547\,909}{94\,931\,877\,133} = 0{,}003737321\%$$

of the possible residue values both (1) and (2) apply. If every residue value is equally likely to occur, then this 0,0037373% is also the probability that for seven random words both (1) and (2) apply. Now this result is remarkable for two reasons. First because of the alternation of the numbers 3 and 7 in the first 5 non-zero digits, which reminds us of the numbers 37 and 73. Secondly, this shows that the likelihood for this event to happen coincidentally for seven random words is very small. Now it might be argued that the reason that this likelihood is so small is for a big part because of properties (1) and (3) and that (2) might be just a coincidental addition. However, even if we only look at the possibilities for which property (1) and (3) both apply, still there are only 967 177 out of 35 978 797 possibilities for which (2) applies (see appendix C), so still for only

$$\frac{967\,177}{35\,978\,797} = 2{,}688\%$$

of the possible cases (2) applies. This shows that (2) is not just a likely consequence of (1) and (3).

2. The $37n + 6k$ property

Let's look at another property of the values of the seven words [913,203,86,401,395,407,296].

(4) Every value of the seven words can be written as $37n + 6k$, with k in $\{-3,-2,-1,0,1,2,3\}$.

In other words: if we look at the difference to the closest multiple of 37, the difference is always divisible by 6. For Gen. 1:1 this gives the following values (e.g. $913 = 25 \times 37 - 12$):

$$[-12,18,12,-6,-12,0,0].$$

Statistically this is a rare phenomenon. Even if we assume (1), only in

$$\left(\frac{7}{37}\right)^5 = 0{,}02424\%$$

of the possible cases (4) applies.

Property (4) contributes significantly to the likelihood of having the many multiples of 37. In fact if (1) and (4) apply, then (2) applies in 38,1% of the possible cases; and if (1), (3) and (4) all apply, (2) applies in 79,3% of the possible cases (see appendix C). (4) also contributes to the likelihood of (1) and (3) with the latter giving a remarkable result. Given (4), then in

$$\frac{60\,691}{823\,543} = 7{,}369\% \approx 7{,}37\%$$

of the possible cases (3) applies (a calculation can be found in appendix B). We see here for the second time an alternation with the numbers 3 and 7.

3. Implications and conclusion

This statistical analysis was initiated to investigate the likelihood of having so many multiples of 37 in seven random words. The goal behind this was to help answering the question if the word values of Gen. 1:1 are coincidental or by design. In search for this answer not only the multiples of 37 in Gen. 1:1 turned out to be a statistically very rare event, also the numbers 37373 and 737 appeared in the statistics (among a few others, see appendix C). This remarkable result clearly fits a lot better in the design-theory than in the coincidence-theory. Moreover it shows that if this was by design, the design is very sophisticated. More sophisticated than what we could reasonably expect from the human authors. It not only requires the capability to calculate these statistics, but also the resources to calculate many of these statistics in order to select the ones most fit out of it; not to mention to form a meaningful sentence with the selected values. Now it might be objected that if a lot of probabilities are calculated, eventually a few will be found in a format with 3 and 7 and so the whole thing can be explained in this way to be normal coincidence. However as part of this research only a limited amount of probabilities was calculated (see appendix C for all calculations used in this research), so this objection doesn't hold.

For the next part let's presuppose that the values of Gen. 1:1 were designed by a divine Designer. Let's have a look at these four properties of Gen. 1:1:

(A) Exactly two of the seven words are a multiple of 37.
(B) Out of the seven words, exactly 23 combinations of words add up to a multiple of 37.
(C) The sum of the seven words is a multiple of 37.
(D) Every value of the seven words can be written as $37n + 6k$, with k in $\{-3, -2, -1, 0, 1, 2, 3\}$.

For all of these properties on itself it can be argued that these are probably part of the design, since they are all statistically rare (max 2,7%) and contributing to the design with 3's and 7's. But the probabilities 0,0037373% and 7,37% are linking them all together. If either one of these four properties would not apply then either the 0,0037373% or 7,37% probability would not be relevant anymore to Gen. 1:1. So these two probabilities are clubbing the four properties into one package, hugely decreasing the likelihood that either one of the four was there by coincidence; since that would mean that not only the property itself was there by coincidence, but also the related probability.

For (A), (B), (C) and (D) all applicable, only a limited amount of possible residue values for the seven words are possible:

Possible residue values for the seven words:	*Number of different orders which are possible:*
0 0 6 6 12 19 31	1260
0 0 6 6 12 25 25	630
0 0 6 12 12 19 25	1260
0 0 6 12 18 19 19	1260
0 0 6 18 25 31 31	1260
0 0 12 12 25 31 31	630
0 0 12 18 25 25 31	1260
0 0 18 18 19 25 31	1260
	Total: 8820

So for only 8820 out of 94 931 877 133 possible residue values for the seven words, meaning for

$$\frac{8\,820}{94\,931\,877\,133} = 0{,}000009291\%$$

of the possible cases (A), (B), (C) and (D) all apply. Hence requiring a design to meet all these criteria eliminates 99,99999% of the possibilities for the designer.

Appendix A

Claim. Given $v_n \in V$ with $V = \{0,1,2,\dots,36\}$, $n \in \{1,2,\dots,7\}$ and with $v_1, v_2, \dots, v_7$ independent from each other with $P(v_n = k) = 1/37$ for all $k \in V$.

Define $w_m = a_1 v_1 + a_2 v_2 + \cdots + a_7 v_7$ with $a_i = \lfloor m/2^{i-1} \rfloor \; modulo \; 2$, for $i \in \{1,2,\dots,7\}$; $W_j = \{w_1, w_2, \dots, w_{2^j-1}\}, j \in \{1,2,\dots,7\}$. Let C_j be the amount of elements of W_j that equal zero and let D be the amount of elements that equal 0 in the set $\{v_1, v_2, \dots, v_7\}$. Then:

$$P(C_7 \geq 23 \wedge D \geq 2) = \frac{3\,547\,909}{94\,931\,877\,133} = 0{,}00003737321021293\dots$$

Calculation. Since $v_1, v_2, \dots, v_7$ are independent and uniformly distributed, every possible $(v_1, v_2, \dots, v_7)$ is equally likely to occur and so the probability $P(C_7 \geq 23 \wedge D \geq 2)$ can be calculated by

$$\frac{\text{total number of possible } (v_1, v_2, \dots, v_7) \text{ for which } C_7 \geq 23 \wedge D \geq 2}{\text{total number of possible } (v_1, v_2, \dots, v_7)}$$

Now the total number of possible $(v_1, v_2, \dots, v_7)$ equals $37^7 = 94\,931\,877\,133$ since every v_n independently can have 37 values. The numerator part of the fraction is a bit more complex to calculate and was calculated with help of computer software. To reduce the workload for the computer please note that

(1) The [total number of possible $(v_1, v_2, \dots, v_7)$ for which $C_7 \geq 23 \wedge D \geq 2$] $= \sum_{j=2}^{7}$[total number of possible $(v_1, v_2, \dots, v_7)$ for which $C_7 \geq 23 \wedge D = j$].

(2) For $D = j$, the total number of possible $(v_1, v_2, \dots, v_7)$ for which $C_7 \geq 23$, can be calculated by $\binom{7}{j} \cdot$ [total number of possible $(v_1, v_2, \dots, v_{7-j})$ for which $C_{7-j} \geq \frac{24}{2^j} - 1$] when assuming that $v_{8-j}, v_{9-j}, \dots, v_7$ are the elements that equal zero (and taking into account that $v_1, v_2, \dots, v_{7-j}$ are non-zero).

(3) V is a group under addition modulo 37: $(\mathbb{Z}/37\mathbb{Z}, +)$. This group is cyclic and for every $l \in \{1,2,\dots,36\}$ there exist a automorphism defined by $k \to lk$ (in particular $1 \to l$). Meaning that for the non-zero elements $v_1, v_2, \dots, v_{7-j}$, the [total number of possible $(v_1, v_2, \dots, v_{7-j})$ for which $C_{7-j} \geq \frac{24}{2^j} - 1$] $=$ $36 \cdot$ [total number of possible $(1, v_2, \dots, v_{7-j})$ for which $C_{7-j} \geq \frac{24}{2^j} - 1$].

Based on the above and with the help of computer calculations the following values were obtained.

	total number of possible $(v_1, v_2, \dots, v_7)$ for which $C_7 \geq 23$: (blue means calculated by computer. Note that for D=5,6,7 always $C_7 \geq 23$.)
D=2	$\binom{7}{2} \cdot 36 \cdot 2565 = 1939140$
D=3	$\binom{7}{3} \cdot 36 \cdot 1115 = 1404900$
D=4	$\binom{7}{4} \cdot 36 \cdot 140 = 176400$
D=5	$\binom{7}{5} \cdot 36 \cdot 36 = 27216$
D=6	$\binom{7}{6} \cdot 36 \cdot 1 = 252$
D=7	1
	Total: 3547909

Appendix B

Claim. Given $v_n \in V$ with $V = \{0,6,12,18,19,25,31\}$, $n \in \{1,2,\dots,7\}$ and with $v_1, v_2, \dots, v_7$ independent from each other with $P(v_n = k) = 1/7$ for all $k \in V$. Define $w_i = v_1 + v_2 + \dots + v_i$ with $i \in \{1,2,\dots,7\}$. Then

$$P(w_7 = 0 \text{ modulo } 37) = \frac{60\,691}{823\,543} = 0.073694998 \dots$$

Calculation. First note that $w_i = 0$ modulo 37 if and only if $w_i = 0$ since $-37 < -3i \leq w_i \leq 3i < 37$. Furthermore $v_1, v_2, \dots, v_7$ are independent and uniformly distributed, so every combination $(v_1, v_2, \dots, v_7)$ is equally likely to occur and the probability $P(w_7 = 0)$ can be calculated by

$$\frac{\text{total number of possible } (v_1, v_2, \dots, v_7) \text{ for which } w_7 = 0}{\text{total number of possible } (v_1, v_2, \dots, v_7)}$$

Since $v_1, v_2, \dots, v_7$ can all have independently 7 different values, the total amount of possible $(v_1, v_2, \dots, v_7)$ equals $7^7 = 823\,543$. To calculate the numerator part of the fraction let's define $W_{i,j}$ as the amount of $(v_1, v_2, \dots, v_i)$ for which $w_i = j$, with j an integer $-21 \leq j \leq 21$. Note that

$$W_{i,j} = \sum_{h=j-3}^{j+3} W_{i-1,h}, \text{ for } i \geq 2$$

Using this formula, the below table was created with Microsoft Excel and shows $W_{7,0} = 60691$.

		Amount of possibilities for $(v_1, v_2, \dots, v_i)$ so that $v_1 + \dots + v_i = j$																		
	j:	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9
i=1								1	1	1	1	1	1	1						
i=2					1	2	3	4	5	6	7	6	5	4	3	2	1			
i=3		1	3	6	10	15	21	28	33	36	37	36	33	28	21	15	10	6	3	1
i=4		20	35	56	84	116	149	180	206	224	231	224	206	180	149	116	84	56	35	20
i=5					640	826	1015	1190	1330	1420	1451	1420	1330	1190	1015	826	640			
i=6								7872	8652	9156	9331	9156	8652	7872						
i=7											60691									

Appendix C

An overview of the calculated probabilities used in this research. Part of these calculations are obtained with help of computer software (in blue) by analysing all possibilities for the residue values and assuming that every possibility is equally likely to occur. These are the events:

(1) At least two of the seven words are a multiple of 37.
(2) Out of the seven words, at least 23 combinations of words add up to a multiple of 37.
(3) The sum of the seven words is a multiple of 37.
(4) Every value of the seven words can be written as $37n + 6k$, with k in $\{-3, -2, -1, 0, 1, 2, 3\}$.
(A) Exactly two of the seven words are a multiple of 37.
(B) Out of the seven words, exactly 23 combinations of words add up to a multiple of 37.

And these are the calculated probabilities:

$$P\big((1)\big) = 1 - \left(\frac{36}{37}\right)^7 - \binom{7}{1}\left(\frac{1}{37}\right)\left(\frac{36}{37}\right)^6 = 0{,}014012\ldots$$

$$P\big((3)\big) = \frac{1}{37} = 0{,}027027\ldots$$

$$P\big((4)\big) = \left(\frac{7}{37}\right)^7 = 0{,}0000086750\ldots$$

$$P\big((1) \wedge (2)\big) = 0{,}000037373\ldots$$

$$P\big((2) \mid (1)\big) = 0{,}0026671\ldots$$

$$P\big((2) \mid (1) \wedge (3)\big) = 0{,}026881\ldots$$

$$P\big((2) \mid (1) \wedge (4)\big) = 0{,}38144\ldots$$

$$P\big((2) \mid (1) \wedge (3) \wedge (4)\big) = 0{,}79324\ldots$$

$$P\big((3) \mid (4)\big) = 0{,}073694\ldots$$

$$P\big((4) \mid (1)\big) = \left(\frac{7}{37}\right)^5 = 0{,}00024237\ldots$$

$$P\big((A) \wedge (B) \wedge (3) \wedge (4)\big) = 0{,}000000092908\ldots$$